

Properties of Matter

5-4 The student will demonstrate an understanding of properties of matter. (Physical Science)

5-4.3 Summarize the characteristics of a mixture, recognizing a solution as a kind of mixture.

Taxonomy level: 2.4-B Understand Conceptual Knowledge

Previous/Future knowledge: Students have been introduced to the concept of how different materials can be mixed together and then separated again in 2nd grade (2-4.4). The concept of solutions being a kind of mixture is new to this grade level. In the 7th grade (7-5.2), students will further develop the concept of mixtures by distinguishing them from elements and compounds.

It is essential for students to know the characteristics of mixtures.

- *Mixtures* are composed of two or more substances that are mixed together but can be separated from each other.
- Mixtures can be made from various combinations of solids, liquids, or gases.
- The substances in a mixture do not permanently change in the mixture, but they keep their separate properties.

Solutions are one type of mixture is a solution.

- They are composed of substances that mix so completely that they cannot be distinguished as separate substances.
- They can, however, be separated back into the separate substances.
- One example of a solution is a mixture of a solid that dissolves completely in a liquid, for example salt or sugar in water.

It is not essential for students to know that mixtures can be heterogeneous or homogeneous or that they can be distinguished from elements and compounds.

Assessment Guidelines:

One objective of this indicator is to *summarize* the characteristics of mixtures; therefore, the primary focus of assessment should be to generalize major point about the characteristics of mixtures. However, appropriate assessments should also require students to *recognize* a substance as a mixture based on characteristics; or *identify* substances in a mixture based on their properties.

Another objective is to *recognize* that a solution is a kind of mixture; therefore, the primary focus of that objective is to retrieve from memory the fact that solutions are a type of mixture. However, appropriate assessments should also require students to *classify* various substances as mixtures or solutions based on characteristics.